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[54] **PAGEABLE FILTER DRIVER FOR PROSPECTIVE IMPLEMENTATION OF DISK SPACE QUOTAS**

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[58] **Field of Search** 707/200-205; 709/300-305; 711/147, 151

[56] **References Cited****U.S. PATENT DOCUMENTS**

5,247,660	9/1993	Ashcraft et al.	707/205
5,421,011	5/1995	Camillone et al.	
5,574,952	11/1996	Brady et al.	710/68
5,634,050	5/1997	Krueger et al.	707/200

5,805,932	9/1998	Kawashima et al.	710/68
6,000,009	12/1999	Brady	710/112
6,032,216	2/2000	Schmuck et al.	707/10

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[57] **ABSTRACT**

A filter driver for implementing disk space quotas is described. Quota limits on disk space taken up by files in the file system are established for users and directories, and an internal database is established to track quotas against actual disk space utilization. A driver in accordance with the invention uses kernel resources of the operating system to prevent execution of file system I/O operations which would violate any established quota. In doing so, the driver executes a logic in kernel mode which serializes file allocation operations and also serializes access to the internal database. The first step in this logic is to intercept file system I/O requests before they reach the file system driver. Then the driver determines prospectively—before the I/O request is completed—whether any quota would be exceeded by completion of the I/O request. If a quota would be exceeded, completion of the I/O request is blocked and an error status is issued. If a quota would not be exceeded, the I/O request is allowed to complete and the driver's internal database is updated with revised disk space utilization data.

8 Claims, 3 Drawing Sheets